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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,648	11/21/2003	Heinz-Peter Frerichs	Micronas.7388	2362

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EXAMINER	
INGHAM, JOHN C	
ART UNIT	PAPER NUMBER
2814	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/31/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/719,648	FRERICHS, HEINZ-PETER	
	Examiner	Art Unit	
	John C. Ingham	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8-14* is/are allowed.

6)☒ Claim(s) *1-7 and 15-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 July 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The amendments to the specification filed 8 November 2006 have been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims **1-7 and 15-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Frerichs (US 2002/0157950), hereinafter "Frerichs '950", in view of Tada (US 6,525,390), hereinafter "Tada.

4. Regarding claims **1 and 15**, Frerichs '950 discloses in Figures 1 and 2 a sensor for measuring an ambient parameter, comprising: a drain (5); a source (2); a channel region (4) disposed between the drain and the source; a conductive guard ring (1) disposed outside the channel region; a sensitive gate layer (8) with a potential that depends on the ambient parameter; and an air gap (10) disposed between the gate layer and the channel region. Furthermore, with regard to claim 1, Frerichs '950 discloses in Figures 1 and 2 a substrate (11) with drain and source disposed thereon.

Frerichs '950 also discloses in Figure 2 an insulating layer (14) disposed between the guard ring (1) and the channel region (4), the insulating layer having a surface (15) on which is disposed a ring structure (7). Frerichs '950 does not, however,

specifically disclose the ring structure (7) having a surface conductivity different from a surface conductivity of a remaining portion of the surface of the insulating layer (14).

Tada discloses in Figure 34a a ring structure (207 along with 220, formed of resistive aluminum) having a surface conductivity different from a surface conductivity of a remaining portion (figure 34b, items 211 and 212) in order to obtain a uniform potential gradient in the ring structure (Tada col. 18 ln. 16-25). Items 211 and 212 in Figure 34b are insulation films, and are of similar structure as the field oxide film (8) in Figure 2 of Frerichs '950. It is well known that field oxide is synonymous with thick silicon dioxide. It would have been obvious to one of ordinary skill in the art at the time of the invention to improve upon the ring structure of Frerichs '950 by using the teachings of Tada to create a field plate with annular ring structures of a second conductivity type upon it, in order to obtain a uniform potential gradient across the ring structure.

5. Regarding claims **2 and 16**, the sensor structure taught by Frerichs '950 discloses the sensor of claims 1 and 15, further comprising surface profiling formed with respect to the insulating layer and having at least one elevation (7) and at least one depression (2), and disposed between the guard ring and the channel region.

6. With regards to claims **3 and 20**, Frerichs '950 discloses the sensor of claims 2 and 15, further comprising a second insulating layer disposed over the channel region (¶ 12).

7. With regards to claim **4**, Tada discloses in Fig 34A a ring structure (207 along with 220), which is comprised of an insulating material (resistive aluminum) disposed on the insulating layer (figure 34b, items 211 and 212).

8. With regards to claim **5**, Frerichs '950 discloses in Fig 1 a ring structure (7), wherein the ring structure comprises a concentric structure.

9. With regards to claims **6 and 17**, Frerichs '950 discloses the sensor of claims 2 and 15, where the ambient parameter comprises a gas concentration (¶ 11).

10. With regards to claims **7 and 18**, Frerichs '950 discloses the sensor of claims 2 and 15, where the parameter comprises an ion concentration (¶ 2).

11. Regarding claim **19**, Frerichs '950 discloses the sensor of claim 15, where the insulating layer (14) comprises an oxide layer (¶ 7).

Double Patenting

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims **1-2, 4-6,15-17 and 19** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 6,929728 in view of Tada. The '728 claims each of the limitations except the ring structure having a surface conductivity different from a surface conductivity of a remaining surface of the insulating layer.

Tada discloses in Figure 34a a ring structure (207 along with 220, formed of resistive aluminum) having a surface conductivity different from a surface conductivity of a remaining portion (figure 34b, items 211 and 212) in order to obtain a uniform potential gradient in the ring structure (Tada col. 18 ln. 16-25). Items 211 and 212 in Figure 34b are insulation films, and are of similar structure as the field oxide film (8) in Figure 2 of Frerichs '950. It is well known that field oxide is synonymous with thick silicon dioxide. It would have been obvious to one of ordinary skill in the art at the time of the invention to improve upon the ring structure of Frerichs '950 by using the teachings of Tada to create a field plate with annular ring structures of a second conductivity type upon it, in order to obtain a uniform potential gradient across the ring structure.

Allowable Subject Matter

14. Claims **8-14** are allowed.

15. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose the sensor as claimed, with a source and drain being spatially separated from the sensor air gap and channel and a gate that is connected by an electrode to the channel region.

Response to Arguments

16. Applicant's arguments filed 8 November 2006 regarding claims 1-7 and 15-20 have been fully considered but they are not persuasive. Regarding the argument on page 11 that Frerichs is not concerned with a uniform potential gradient across the field oxide, but instead with an equal potential between the FET and guard ring, disclosed examples and preferred embodiments of the references do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). "A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use." In re Gurley, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994). In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does

not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, the motivation to provide a ring structure having a surface conductivity different from a surface conductivity of a remaining surface of the insulating layer as taught by Tada is in order to obtain a uniform potential gradient across the ring structure.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Ingham whose telephone number is (571) 272-8793. The examiner can normally be reached on M-F, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John C Ingham
Examiner
Art Unit 2814

jci

HOWARD WEISS
PRIMARY EXAMINER